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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/680,342	10/05/2000	Patrick F. Leonard	ESI-116-A	7827

7590

04/26/2002

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EXAMINER

KAO, CHIH CHENG G

ART UNIT PAPER NUMBER

2882

DATE MAILED: 04/26/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/680,342

Applicant(s)

LEONARD ET AL.

Examiner

Chih-Cheng Glen Kao

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) 1-7 and 14-16 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 8-13 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 October 2000 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1-7, drawn to measuring a shape, classified in class 356, subclass 608.
 - II. Claims 8-13, drawn to semiconductor inspection, classified in class 438, subclass 16.
 - III. Claims 14-16, drawn to a sensor, classified in class 250, subclass 208.1.

Inventions I and II are related as subcombinations disclosed as usable together in a single combination. The subcombinations are distinct from each other if they are shown to be separately usable. In the instant case, invention I has separate utility such as a method for locating a dent in an aluminum cylinder. See MPEP § 806.05(d).

Inventions I and III are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case the process I can be practiced by a conventional sensor and moving lasers.

Inventions II and III are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice

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another and materially different process. (MPEP § 806.05(e)). In this case the process II can be practiced by a conventional sensor and moving lasers.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

During a telephone conversation with Thomas Bejin on February 20, 2002, a provisional election was made without traverse to prosecute the invention of II, claims 8-13. Affirmation of this election must be made by applicant in replying to this Office action. Claims 1-7 and 14-16 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Drawings

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "14" in Figure 3 has been used to designate both the right and left laser. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description:

Fig. 5, #11

Fig. 11, #11, 15, and 17

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Fig. 12, “s”

Fig. 13, #1, 2, 3, 4, 5, “A”, and “B”

A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the description, are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

The disclosure is objected to because of the following informalities:

4. Benefit of the following prior provisional application, Application No. 60/257,763, filed October 5, 1999, is recited on Page 1, lines 5 and 6. “60/257,763” does not match Application No. 60/157,763 in the declaration. This objection may be obviated by deleting “60/257,763” on Page 1, line 6, and inserting --60/157,763--.

5. There seems to be an extra “s” as recited on page 1, line 31. This objection may be obviated by deleting “s” to correct the grammatical error.

6. The phrase “must either be repaired or but in the case of BGAs is often discarded” contains inconsistent verb structure. This objection may be obviated by deleting “but in the case of BGAs is often discarded” and inserting --in the case of BGAs be often discarded--.

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7. In the Brief Description of the Figures, Figure 5 refers to an alternate representation of the operation of the sensor/processor of Figure 3. However, Figure 3 does not contain an operation of a sensor/processor. Figure 5 may be referring an alternate representation of Figure 4. This objection may be obviated by deleting “3” on Page 4, line 19, and inserting --4--.

8. On page 7, lines 29 and 30, “Figure 9” is recited. However, Figure 9 does not include analog electronics 31. Figure 5 includes analog electronics 31. This objection may be obviated by deleting “9” on page 7, line 30, and inserting --5--.

9. On page 8, line 22, “a second degree polynomial using at least squares method” is recited. This objection may be obviated by deleting “at” and inserting --a-- to correct the grammatical error.

10. On page 20, lines 6 and 7, as “shown in FIGURE 12 3D data is simultaneously pre-process when the 2D data is pre-processed.” It is indefinite as to how Figure 12 shows this. This objection may be obviated by deleting “12” and inserting --17--, so that Figure 17 shows the simultaneous pre-processing.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Roy et al. (US Patent 5956134).

Roy et al. discloses a method comprising acquiring a two dimensional image, acquiring a three dimensional image, providing a two dimensional template which inherently represents the number, location, and shape of the three dimensional feature, comparing the two dimensional image against the template for rejection of semiconductor devices (Abstract), and evaluating the three dimensional image if the two dimensional comparison matches the expected configuration (col. 8, lines 20-30 and 54-59), wherein the data characteristics in the three dimensional image are located as a function of the data in the two dimensional image characteristic (col. 10, lines 1-13).

However, Roy et al. does not seem to specifically disclose evaluating an "IC package".

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to evaluate IC packages with the method of Roy et al., since IC packages and semiconductor devices are considered functionally equivalent. One would be motivated to inspect IC packages to insure quality and prevent device failure due to IC package defects.

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12. Claims 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Roy et al as applied to claim 8 above, and further in view of Michael et al. (US Patent 6173070).

Roy et al. suggests a method as recited above.

However, Roy et al. does not seem to specifically disclose gray scale correlation.

Michael et al. teaches normalized gray scale correlation (col. 1, lines 29-40).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to have the gray scale correlation of Michael et al. with the suggested method of Roy et al., since one would be motivated to incorporate something that is already well known in the art as shown by Michael et al. (col. 1, lines 25-37). Secondly, one would be motivated to use normalized gray scale correlation to quickly align the semiconductor device as shown by Michael et al. (col. 1, lines 39-42).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chih-Cheng Glen Kao whose telephone number is (703) 605-5298. The examiner can normally be reached on M - Th (8 am to 5 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim can be reached on (703) 305-3492. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7724 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



gk
April 22, 2002



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SUPERVISORY PATENT EXAMINER
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